TA710.3S356N6 1989 c.2

SOIL AND PLANT LABORATORY, INC.
Member of The California Association of Agricultural Laboratories

1/12-WHM
JHS

SANTA CLARA OFFICE
January 11, 1989
Lab No. 17309

SANTA CLARA VALLEY WATER DISTRICT
5750 Almaden Expressway
San Jose, CA. 95118

Attn: Bill Migneault

RE: NORTH POND SLIME SITE, SAN JOSE SOIL SAMPLE RECEIVED 12-21-88

The understood purpose of the physical and chemical testing was to evaluate the horticultural suitability of the fine-textured soil as a potential fill soil particularly in land fill sites.

ANALYTICAL RESULTS

PHYSICAL PROPERTIES: The soil is clay in texture with a high 60.8% clay content. When moist, the soil appeared very stiff or plastic. The gravel and coarse sand contents are not excessive. Organic matter content is a low 1.0%.

CHEMICAL PROPERTIES: The pH value is a moderately alkaline 8.2. Most landscape plants grow best with a slightly acidic soil pH between 6.0 - 7.0. A detected moderate lime content in the sample will prevent rapid reduction of the pH level. The salinity, sodium, and boron levels are very safely low. Saturation extract chloride concentration is a low 2.0 meq/liter.

Availabilities of nitrogen, phosphorus, and potassium are very deficient. Calcium availability is optimum with a high magnesium supply. The cation exchange capacity (CEC) is good, which is characteristic of most clay soils. Calcium and magnesium are saturating most of the exchange sites, which is common for deeply excavated soil.

RECOMMENDATIONS

The very high clay content might be a desirable feature for sealing landfills, but it severely limits use of this soil for constructing most of the rootzone for landscape planting. The engineering potential can be evaluated by a qualified landfill engineer. It is possible that the clay will need to be buried under a more horticulturally suitable import soil if some type of cover planting is planned. Depth of placement or filling depends on the species of plants in the design.

The clay content in the sample is excessively high, preventing practical improvement of the soil structure by amending. However, it is good to note

TA
710.3
S356.N6
1989

that any deeply rooted landscape plants that might slightly root into a horizon of this clay should not be adversely impacted by any severe chemical excesses, though waterlogging at the clay interface might be a seasonal problem if subsurface drain lines are not installed.

John Jenkins

JOHN JENKINS, M.S.

smy

Soil and Plant Laboratory, Inc.

P.O. Box 11744, Santa Ana, California 92711-1744/(714) 558-8333
P.O. Box 153, Santa Clara, California 95052-0153/(408) 727-0330
P.O. Box 1648, Bellevue, Washington 98009-1648/(206) 746-6665

SANTA CLARA VALLEY WATER DISTRICT
5750 Almaden Expressway
San Jose, CA 95118

COMPLETE SOIL EVALUATION
(A05)

January 11, 1989
Lab No. 17309
NORTH POND SLIME SITE, SAN JOSE
P. O. NO. 49343

Sample #	Half Sat. %	Parts Per Million Dry Soil							Saturation Extract Values								
		NO3-N	NH4-N	PO4-P	K	Ca	Mg	pH	ECe	Ca Me/l	Mg Me/l	Na Me/l	K Me/l	B PPM	SAR	QUAL Lime	CEC meq/100g
1	40	7	4	5	110	4370	2025	8.2	0.7	2.4	3.1	2.5	0.1	0.16	1.5	MED	26.1

				% of sample passing 2 mm screen						
		Gravel		Sand						
Sample #	Org. %	Coarse >5.00	Fine 2.0-5.0	Very Coarse 1.0-2.0	Coarse 0.5-1.0	Med. to V. Fine .05-.5	Silt .002-.05	Clay 0-.002	Soil Classification	SAMPLE DESCRIPTION
1	1.0	4.5	4.4	3.4	3.2	10.0	22.6	60.8	CLAY	

Sample REC'D: 12-21-88

Half Saturation %-approx. field moisture capacity. Salinity = ECe (mmhos/cm at 25 degrees C.). SAR-Sodium Adsorption Ratio. Gravel fraction expressed as percent by weight of sample as received. Particle sizes in millimeters.

Soil and Plant Laboratory, Inc.

P.O. Box 11744, Santa Ana, California 92711-1744/(714) 558-8333
P.O. Box 153, Santa Clara, California 95052-0153/(408) 727-0330
P.O. Box 1648, Bellevue, Washington 98009-1648/(206) 746-6665

SANTA CLARA VALLEY WATER DISTRICT
5750 Almaden Expressway
San Jose, CA 95118

SOIL FERTILITY AND MICRONUTRIENT ANALYSIS
(A01 OR A17)

November 1, 1988
Lab No. 14932
SLUDGE CAKE PROJECT
P. O. No. 48563

Sample #	Half Sat. %	pH	ECe	Parts Per Million Dry Soil										Sat. Extract		SAMPLE DESCRIPTION
				NO_3-N	NH_4-N	PO_4-P	K	Ca	Mg	Cu	Zn	Mn	Fe	Li ppm	SO4 Me/l	
	129			179	7	37	128	2500	728	70	10	520	41	0.01	1.1	

Sample rec'd: 10-21-88

alf Saturation %=approx. field moisture capacity. Salinity = ECe (mmhos/cm @ 25 deg. C.) by sat. extract method. Major element by sodium acetate and sodium bicarbonate extraction. Micronutrients by DTPA extraction except boron by saturation extraction. "*" means below the detection limit for the element.

ORGANIC AMENDMENT ANALYSIS
(A07)

Sample #	pH	ECe	H_2O % as Rec'd	Values based upon dry weight										
				Bulk Density lbs/yd^3	Org. %	percent passing						Total Nitrogen %	H^+ Soluble Iron %	Half Saturation %
						9.51 mm	6.35 mm	4.75 mm	2.38 mm	1.00 mm	.500 mm			
1	6.6	2.2	68.8	1429	23.0	90.8	77.6	70.5	50.0	27.4	11.8	0.51	0.393	129

Half Saturation %=approx. field moisture capacity. ECe (mmhos/cm @ 25 deg. C.) by saturation extract method.

Soil and Plant Laboratory, Inc.
Member of The California Association of Agricultural Laboratories
P.O. Box 11744, Santa Ana, California 92711-1744 (714) 558-8333 Telex Number: IRIN 188747
P.O. Box 153, Santa Clara, California 95052-0153 (408) 727-0330
P.O. Box 1648, Bellevue, Washington 98009-1648 (206) 746-6665

SANTA CLARA VALLEY
WATER DISTRICT
5750 Almaden Expressway
San Jose, CA 95118

AGRICULTURAL SUITABLITY ANALYSIS
(AG2)

November 1, 1988
Lab No. 14932
SLUDGE CAKE PROJECT
P. O. No. 48563

Sample #	Half Sat. %	pH	Saturation Extract Values						SAR	Qual lime	SAMPLE DESCRIPTION
			ECe	Ca Me/l	Mg Me/l	Na Me/l	K Me/l	B ppm			
1		6.6	2.2	8.1	7.5	5.8	0.2	0.04	2.1	LOW	

Sample rec'd: 10-21-88

Half Saturation %-Approximate field moisture capacity. ECe-mmhos/cm at 25 degrees C.
SAR-Sodium Adsorption Ratio.

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Santa Clara Valley Water Dist.
400 More Avenue
Los Gatos, CA 95030
Attention: Bruce Loucks

Client Project ID: N/A
Sample Descript: Slime (Sludge)
Lab Number: 902-0709

Sampled: Jan 26, 1989
Received: Jan 31, 1989
Reported: Feb 22, 1989

INORGANIC PERSISTENT AND BIOACCUMULATIVE TOXIC SUBSTANCES

	Soluble Threshold Limit Concentration Waste Extraction Test			Total Threshold Limit Concentration		
Analyte	STLC Max. Limit (mg/L)	Detection Limit (mg/L)	Analysis Result (mg/L)	TTLC Max. Limit (mg/kg)	Detection Limit (mg/kg)	Analysis Result (mg/kg)
Antimony	15	0.1	-	500	0.5	0.92
Arsenic	5	0.01	0.017	500	0.1	0.54
Barium	100	0.02	5.7	10,000	0.2	180
Beryllium	0.75	0.01	-	75	0.1	0.43
Cadmium	1	0.01	-	100	0.1	0.32
Chromium (VI)	5	0.005	-	500	0.05	N.D.
Chromium (III)	560	0.005	-	2,500	0.05	83
Cobalt	80	0.05	-	8,000	0.5	33
Copper	25	0.01	0.17	2,500	0.1	48
Lead	5	0.005	0.058	1,000	0.05	8.2
Mercury	0.2	0.001	0.0038	20	0.01	7.0
Molybdenum	350	0.05	-	3,500	0.5	2.1
Nickel	20	0.05	2.4	2,000	0.5	180
Selenium	1	0.005	0.02	100	0.1	2.3
Silver	5	0.01	-	500	0.1	0.24
Thallium	7	0.5	-	700	5.0	N.D.
Vanadium	24	0.05	1.2	2,400	0.5	51
Zinc	250	0.01	-	5,000	0.1	70
Asbestos	-	10	-	10,000	100	N.D.
Fluoride	180	0.1	-	18,000	1.0	-

TTLC results are reported as mg/kg of wet weight. Asbestos results are reported as fibers/g.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

TA710.3 J356 N6 1989

SOIL AND PLANT LABORATORY, INC.
Member of The California Association of Agricultural Laboratories

1/12 - WHM
JHS

SANTA CLARA OFFICE
January 11, 1989
Lab No. 17309

SANTA CLARA VALLEY WATER DISTRICT
5750 Almaden Expressway
San Jose, CA. 95118

Attn: Bill Migneault

RE: NORTH POND SLIME SITE, SAN JOSE SOIL SAMPLE RECEIVED 12-21-88

The understood purpose of the physical and chemical testing was to evaluate the horticultural suitability of the fine-textured soil as a potential fill soil particularly in land fill sites.

ANALYTICAL RESULTS

PHYSICAL PROPERTIES: The soil is clay in texture with a high 60.8% clay content. When moist, the soil appeared very stiff or plastic. The gravel and coarse sand contents are not excessive. Organic matter content is a low 1.0%.

CHEMICAL PROPERTIES: The pH value is a moderately alkaline 8.2. Most landscape plants grow best with a slightly acidic soil pH between 6.0 - 7.0. A detected moderate lime content in the sample will prevent rapid reduction of the pH level. The salinity, sodium, and boron levels are very safely low. Saturation extract chloride concentration is a low 2.0 meq/liter.

Availabilities of nitrogen, phosphorus, and potassium are very deficient. Calcium availability is optimum with a high magnesium supply. The cation exchange capacity (CEC) is good, which is characteristic of most clay soils. Calcium and magnesium are saturating most of the exchange sites, which is common for deeply excavated soil.

RECOMMENDATIONS

The very high clay content might be a desirable feature for sealing landfills, but it severely limits use of this soil for constructing most of the rootzone for landscape planting. The engineering potential can be evaluated by a qualified landfill engineer. It is possible that the clay will need to be buried under a more horticulturally suitable import soil if some type of cover planting is planned. Depth of placement or filling depends on the species of plants in the design.

The clay content in the sample is excessively high, preventing practical improvement of the soil structure by amending. However, it is good to note

P.O. Box 11744, Santa Ana, California 92711-1744 (714) 558-8333 Telex Number: IRIN 188747
P.O. Box 153, Santa Clara, California 95052-0153 (408) 727-0330
P.O. Box 1648, Bellevue, Washington 98009-1648 (206) 746-6665

that any deeply rooted landscape plants that might slightly root into a horizon of this clay should not be adversely impacted by any severe chemical excesses, though waterlogging at the clay interface might be a seasonal problem if subsurface drain lines are not installed.

John Jenkins

JOHN JENKINS, M.S.

smy

Soil and Plant Laboratory, Inc.

P.O. Box 11744, Santa Ana, California 92711-1744/(714) 558-8333
P.O. Box 153, Santa Clara, California 95052-0153/(408) 727-0330
P.O. Box 1648, Bellevue, Washington 98009-1648/(206) 746-6655

SANTA CLARA VALLEY WATER DISTRICT
5750 Almaden Expressway
San Jose, CA 95118

COMPLETE SOIL EVALUATION
(A05)

January 11, 1989
Lab No. 17309
NORTH POND SLIME SITE, SAN JOSE
P. O. NO. 49343

		Parts Per Million Dry Soil							Saturation Extract Values								
Sample #	Half Sat. %	NO3-N	NH4-N	PO4-P	K	Ca	Mg	pH	ECe	Ca Me/l	Mg Me/l	Na Me/l	K Me/l	B PPM	SAR	QUAL Lime	CEC meq/100g
1	40	7	4	5	110	4370	2025	8.2	0.7	2.4	3.1	2.5	0.1	0.16	1.5	MED	26.1

		Gravel		% of sample passing 2 mm screen: Sand						
Sample #	Org. %	Coarse >5.00	Fine 2.0-5.0	Very Coarse 1.0-2.0	Coarse 0.5-1.0	Med. to V. Fine .05-.5	Silt .002-.05	Clay 0-.002	Soil Classification	SAMPLE DESCRIPTION
1	1.0	4.5	4.4	3.4	3.2	10.0	22.6	60.8	CLAY	

Sample REC'D: 12-21-88

Half Saturation %-approx. field moisture capacity. Salinity = ECe (mmhos/cm at 25 degrees C.). SAR-Sodium Adsorption Ratio
Gravel fraction expressed as percent by weight of sample as received. Particle sizes in millimeters.

Soil and Plant Laboratory, Inc.

P.O. Box 11744, Santa Ana, California 92711-1744/(714) 558-8333
P.O. Box 153, Santa Clara, California 95052-0153/(408) 727-0330
P.O. Box 1648, Bellevue, Washington 98009-1648/(206) 746-6665

SANTA CLARA VALLEY WATER DISTRICT
5750 Almaden Expressway
San Jose, CA 95118

SOIL FERTILITY AND MICRONUTRIENT ANALYSIS (A01 OR A17)

November 1, 1988
Lab No. 14932
SLUDGE CAKE PROJECT
P. O. No. 48563

Sample #	Half Sat. %	pH	ECe	Parts Per Million Dry Soil NO_3-N	NH_4-N	PO_4-P	K	Ca	Mg	Cu	Zn	Mn	Fe	Sat. Extract Li ppm	SO4 Me/l	SAMPLE DESCRIPTION
	129			179	7	37	128	2500	728	70	10	520	41	0.01	1.1	Sample rec'd: 10-21-88

Half Saturation %=approx. field moisture capacity. Salinity = ECe (mmhos/cm @ 25 deg. C.) by sat. extract method. Major element by sodium acetate and sodium bicarbonate extraction. Micronutrients by DTPA extraction except boron by saturation extraction. "*" means below the detection limit for the element.

ORGANIC AMENDMENT ANALYSIS (A07)

Sample #	pH	ECe	H_2O % as Rec'd	Values based upon dry weight Bulk Density lbs/yd^3	Org. %	percent passing 9.51 mm	6.35 mm	4.75 mm	2.38 mm	1.00 mm	.500 mm	Total Nitrogen %	H^+ Soluble Iron %	Half Saturation %
1	6.6	2.2	68.8	1429	23.0	90.8	77.6	70.5	50.0	27.4	11.8	0.51	0.393	129

Half Saturation %=approx. field moisture capacity. ECe (mmhos/cm @ 25 deg. C.) by saturation extract method.

Soil and Plant Laboratory, Inc.
Member of The California Association of Agricultural Laboratories

P.O. Box 11744, Santa Ana, California 92711-1744 (714) 558-8333 Telex Number: IRIN 188747
P.O. Box 153, Santa Clara, California 95052-0153 (408) 727-0330
P.O. Box 1648, Bellevue, Washington 98009-1648 (206) 746-6665

SANTA CLARA VALLEY
WATER DISTRICT
5750 Almaden Expressway
San Jose, CA 95118

AGRICULTURAL SUITABLITY ANALYSIS
(AO2)

November 1, 1988
Lab No. 14932
SLUDGE CAKE PROJECT
P. O. No. 48563

			Saturation Extract Values								
Sample #	Half Sat. %	pH	ECe	Ca Me/l	Mg Me/l	Na Me/l	K Me/l	B ppm	SAR	Qual lime	SAMPLE DESCRIPTION
1		6.6	2.2	8.1	7.5	5.8	0.2	0.04	2.1	LOW	

Sample rec'd: 10-21-88

Half Saturation %-Approximate field moisture capacity. ECe-mmhos/cm at 25 degrees C.
SAR-Sodium Adsorption Ratio.

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Santa Clara Valley Water Dist.
400 More Avenue
Los Gatos, CA 95030
Attention: Bruce Loucks

Client Project ID: N/A
Sample Descript: Slime (Sludge)
Lab Number: 902-0709

Sampled: Jan 26, 1989
Received: Jan 31, 1989
Reported: Feb 22, 1989

INORGANIC PERSISTENT AND BIOACCUMULATIVE TOXIC SUBSTANCES

	Soluble Threshold Limit Concentration Waste Extraction Test			Total Threshold Limit Concentration		
Analyte	STLC Max. Limit (mg/L)	Detection Limit (mg/L)	Analysis Result (mg/L)	TTLC Max. Limit (mg/kg)	Detection Limit (mg/kg)	Analysis Result (mg/kg)
Antimony	15	0.1	-	500	0.5	0.92
Arsenic	5	0.01	0.017	500	0.1	0.54
Barium	100	0.02	5.7	10,000	0.2	180
Beryllium	0.75	0.01	-	75	0.1	0.43
Cadmium	1	0.01	-	100	0.1	0.32
Chromium (VI)	5	0.005	-	500	0.05	N.D.
Chromium (III)	560	0.005	-	2,500	0.05	83
Cobalt	80	0.05	-	8,000	0.5	33
Copper	25	0.01	0.17	2,500	0.1	48
Lead	5	0.005	0.058	1,000	0.05	8.2
Mercury	0.2	0.001	0.0038	20	0.01	7.0
Molybdenum	350	0.05	-	3,500	0.5	2.1
Nickel	20	0.05	2.4	2,000	0.5	180
Selenium	1	0.005	0.02	100	0.1	2.3
Silver	5	0.01	-	500	0.1	0.24
Thallium	7	0.5	-	700	5.0	N.D.
Vanadium	24	0.05	1.2	2,400	0.5	51
Zinc	250	0.01	-	5,000	0.1	70
Asbestos	-	10	-	10,000	100	N.D.
Fluoride	180	0.1	-	18,000	1.0	-

TTLC results are reported as mg/kg of wet weight. Asbestos results are reported as fibers/g.
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director